

Amendments to the Specification

IN THE ABSTRACT OF THE DISCLOSURE

Attached hereto is a replacement Abstract with markings to show amendments.

IN THE WRITTEN DESCRIPTION

Please replace the paragraph beginning at page 1, line 9, with the following rewritten paragraph:

There are over 400 compounds in the VP fraction of cigarette smoke (for example aldehydes, ketones and hydrocarbons). Activated carbon is a strong adsorbent; it is effective in removing a large number of these compounds from tobacco smoke. However, the compounds in the VP fraction all tend to be reduced by activated carbon to a similar extent, so activated carbon may be described as an effective "blanket adsorbent".

Please replace the paragraphs beginning at page 2, line 24, with the following rewritten paragraphs:

According to the present invention there is provided a tobacco smoke filter containing a ~~high-activity~~high-activity activated carbon impregnated with a metal impregnant.

Preferably the metal impregnant is present in an amount which is up to 10% of the dry weight of the high activity activated carbon. More preferably, the impregnant is present in an amount which is from 1 to 5% of the ~~high-activity~~high-activity activated carbon. The metal impregnant may be, for example, one or more of copper, manganese, molybdenum, cobalt, iron, zinc. In one preferred embodiment, the impregnant is copper. In another preferred embodiment the metal impregnant is a combination of copper and molybdenum.

In the present specification, by "metal impregnant", "copper" and "molybdenum" etc. it is meant the metals themselves and/or their ions, in any form (e.g. salts, complexes, chelates etc.).

The activated carbon of the invention may be derived from any raw material for which it is possible to prepare an activated carbon. ~~These~~ These raw materials from which activated carbons may be prepared include, for example, wood, coal, nutshell such as coconut, peat, petroleum coke and bone; and synthetic sources such as poly(acrylonitrile) or phenol-formaldehyde.

Please replace the paragraphs beginning at page 4, line 17, with the following rewritten paragraphs:

Preferably the activated carbon is a ~~high-activity~~ high-activity activated carbon.

According to the present invention, in a further aspect, there is provided a tobacco smoke filter containing activated carbon which is impregnated with copper and molybdenum, wherein the activated carbon is a ~~high-activity~~ high-activity activated carbon.

~~High-activity~~ High-activity activated carbons are discussed above. Preferably, the activity of the activated carbon is greater than 90% CTC, more preferably, greater than 100% CTC.

Please replace the paragraphs beginning at page 5, line 17, with the following rewritten paragraphs:

The particle size of the activated carbon of the invention depends on the performance required and the filter configuration. In the specification, mesh sizes given are US Mesh. Suitable impregnated activated carbon is of a particle size between 2mm (mesh size 10) and 0.15mm (100 mesh). Preferably, substantially all of the impregnated activated carbon is of a particle size between 0.6mm (30 mesh) and 0.212mm (70 mesh). More preferably, substantially all of the impregnated activated carbon is of a particle size between 0.425mm (40 mesh) and 0.212 mm (70 mesh).

The impregnated activated carbon of tobacco smoke filters according to the invention may display surprising selective

removal of HCN without detrimental ~~effect~~effects on overall VP reduction. Impregnated carbons have not previously found favour in cigarette applications between chemical reactions between the impregnated component (e.g. metal ion) and components present in smoke (and/or the products of these reactions) have a detrimental effect on the taste of the cigarette, which reduces smoker satisfaction. The tobacco smoke filters of the invention may include a rather lower amount of e.g. impregnated copper, impregnated copper and molybdenum than previously thought necessary for acceptable removal of ~~HCN, this~~HCN. This is likely to reduce any adverse effects on taste.

The applicants have also shown that the benefits of the activated carbon of filters according to the invention are surprisingly effective at lower levels of activated carbon weight. This may reduce costs associated with filter manufacture. Preferred tobacco smoke filters contain less than 150mg activated carbon impregnated with a metal impregnant (e.g. copper and molybdenum). Particularly preferred tobacco smoke filters contain from 10mg to 70mg impregnated activated carbon, more preferably 30mg to 60mg impregnated activated carbon.

The filter according to the present invention may be of any design previously proposed for particulate adsorbent - containing tobacco smoke filters. For example, the impregnated activated carbon according to the invention may be dispersed throughout the filter plug, carried on the tow or fibres or sheet material which is gathered to form the ~~plug~~plug or may instead adhere to one or more threads which extend through the matrix of the filter plug or be adhered to the inner face of a wrapper around the filter plug (as described for example in GB-A-9124535 and GB-A-9221545, to which attention is directed for more information) or it may form a bed sandwiched between a pair of plugs (e.g. of cellulose acetate tow) in a common wrapper.

Please replace the paragraphs beginning at page 7, line 23, with the following rewritten paragraphs:

The present invention also provides a filter cigarette comprising a filter ~~according to any preceding claim~~ joined at its upstream end to a wrapped tobacco rod. The cigarette filter according to the invention will usually be attached to a wrapped tobacco rod with conventional tipping overwrap, which may be a ventilated or non-ventilated overlap.

The invention is illustrated by the following examples and with reference to the attached drawings, in which Figs. 1 and 2 respectively are schematic sectional side elevational views, not to scale, of an individual filter and filter cigarette according to one embodiment of the invention, and Fig. 3 is a schematic sectional side elevation view, not to scale, of an individual filter according to a different embodiment of the invention.

Please replace the paragraph beginning at page 12, line 25, with the following rewritten paragraph:

Activated carbons derived from different base materials (e.g. coconut shell and coal) have been prepared, and these show there is little difference in terms of HCN retention between, for example, coal and coconut for the same mesh size, level of impregnation and activity.

Please replace the paragraphs beginning at page 14, line 1, with the following rewritten paragraphs:

Retention of performance over time

A disadvantage of known ~~carbon-containing~~carbon-containing filters is that the carbon in the filter adsorbs volatile species present in the filter or tobacco during storage, thereby reducing the efficiency with which the carbon can remove VP compounds on smoking. This has the effect that the overall efficiency with which known carbons remove HCN reduces on aging. The applicants tested the change in performance of filter cigarettes which included filters which

embody the invention. The filters included approximately 95mg of carbon per filter.

The filters embodying the invention ~~where~~were stored as assembled cigarettes and the change in performance was measured at 0, 3 and 6 months. The results are shown in Table 5.

Please replace the paragraph beginning at page 15, line 6, with the following rewritten paragraph:

The Fig. 1 filter has a cylindrical buccal end filtering plug 2 of cellulose acetate tow, a cylindrical upstream filtering plug 3 of cellulose acetate tow, and a filter wrapper 4 engaged around the plugs to form a cavity 68 therebetween. The cavity 68 is filled with granules 17 of activated carbon impregnated with copper and molybdenum prepared according to the methods above and of identical composition to sample ref 11 described above.

Please replace the paragraph beginning at page 15, line 31, with the following rewritten paragraph:

The upstream end plug 3 is a 10 mm long wrapped acetate (WA) plug - i.e. a preformed wrapped plug of plasticized cellulose acetate filaments. The filter wrapper is 27 mm long to give a cavity 68, which is 7 mm long, extending between plugs 2 and 3. The cavity 68 is filled with 100mg of granules 17 of activated carbon impregnated with copper and molybdenum prepared according to the methods above and of identical composition to sample ref 11 described above. The filter rod is attached by a ventilating tipping overwrap 12 to a commercial wrapped tobacco rod 10, 11.